



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Xie et al.

Serial No.: 09/944.593

Filed Title : August 31, 2001

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COMPACT POLARIZATION INSENSITIVE CIRCULATORS WITH

SIMPLIFIED STRUCTURE AND LOW POLARIZATION MODE DISPERSION

Examiner: Lee A. Fineman

Commissioner for Patents Washington, D.C. 20231

## RESPONSE TO OFFICE ACTION MAILED JULY 18, 2002

In response to the action mailed July 18, 2002, please amend the application as follows:

## In the specification:

Please replace the paragraph beginning at page 17, line 13 with the following rewritten paragraph:

Upon exiting the first nonreciprocal rotators, both components have the same polarization orientation before entering first beam angle turners 130A-B. First beam angle turners 130A-B turn both components towards the longitudinal axis of the circulator. The components then exit the first beam angle turner and transit complete gap 136. The components next pass through second beam angle turner 140A-B, which bends the components such that they are aligned with the longitudinal axis of second imaging element 172. Viewing from the top of the circulator (as-seen in FIG. 2A, discussed below), the longitudinal axis of the second imaging element should be on substantially the same line with the axis of the first imaging element to achieve circulation from second optical port 106 to third optical port 104. Complete gap 136 is adjusted such that the angle turning at second beam angle turners 140A-B occurs at the circulator axis that is in line with the axis of first imaging element 170 and second imaging element 172. The components then enter second nonreciprocal

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